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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte LEOPOLDO LAGO

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Appeal 2019-006873
Application 14/782,886
Technology Center 3700

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Before JENNIFER D. BAHR, WILLIAM A. CAPP, and GEORGE R. HOSKINS, *Administrative Patent Judges*.

HOSKINS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject all pending claims 1–9 and 11 under 35 U.S.C. § 103 as having been obvious over Nothum (US 2005/0092730 A1, pub. May 5, 2005), Onozato (US 8,567,308 B2, iss. Oct. 29, 2013), and Simensen (US 6,345,770 B1, iss. Feb. 12, 2002).

We AFFIRM.

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Tecno Pool S.p.A. as the real party in interest. Appeal Br. 3.

CLAIMED SUBJECT MATTER

Claim 1 is the sole independent claim on appeal, and it recites:

1. A cooking installation (2), comprising:
a cooking chamber;
at least one conveyor belt (10) unit positioned in said cooking chamber and following a spiral path of vertical axis, to receive food products and drive said food products from an inlet opening (14) to an outlet opening (16) of said cooking chamber;
a plurality of vertical columns supporting an inner side and an outer side of said at least one conveyor belt having the spiral path;
a heat exchange circuit (30) comprising a bundle of pipes (44) disposed as a spiral inserted within said conveyor belt (10) unit and divided into a plurality of portions (60, 62) involving different vertically superposed zones of said cooking chamber and connected together in parallel, and to a heat control unit (32) for generating a heating fluid;
a regulating system that independently regulates a flow rate of said heating fluid within said portions (60, 62) of the heat exchange circuit (30); and
a management and control unit for said heat exchange circuit,
wherein the system driving the conveyor belt comprises a plurality of toothed wheels (28) which are spaced vertically from one another, the plurality of toothed wheels being disposed at an exterior of the spiral path and engaging appendices emerging from an outer edge of the at least one conveyor belt (10), to drag the conveyor belt into movement along support members fixed to a support structure (8).

Appeal Br. 20 (Claims App.).

OPINION

Appellant argues claims 1–9 and 11 as a group, without separately arguing any one claim in the group. Appeal Br. 10–19. Accordingly, we select claim 1 to decide the appeal, with the other claims standing or falling with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2017).

As pertinent to Appellant's arguments on appeal, claim 1 recites a "conveyor belt . . . following a spiral path," with "a plurality of vertical columns supporting an inner side and an outer side of [the] conveyor belt." Appeal Br. 20 (Claims App.). Further, "a plurality of toothed wheels" are "disposed at an exterior of the spiral path and engaging appendices emerging from an outer edge of the . . . conveyor belt . . . to drag the conveyor belt into movement." *Id.*

The Examiner finds Nothum correspondingly discloses, as shown in Figure 2, a conveyor belt (i.e., conveyor 24) following a spiral path. Non-Final Act. (mailed Dec. 5, 2018), 5; Nothum ¶ 26. However, Nothum's belt 24 is not supported by vertical columns at inner and outer sides of the conveyor belt, and is not driven by toothed wheels at an exterior of the spiral path to engage appendices of the belt to drag the belt into movement. Non-Final Act. 5–6.

The Examiner finds Onozato discloses, as shown in Figures 8, 9, 12, and 15, a conveyor belt (i.e., endless transfer belt 60) following a spiral path (i.e., spiral transfer route 41). *Id.* at 6; Onozato, Fig. 8, 15:29–32, 16:19–20. The Examiner finds Onozato also discloses belt 60 is supported by a plurality of vertical columns (i.e., support struts 66) at inner and outer sides of belt 60. Non-Final Act. 6; Onozato, Figs. 8–9, 16:19–20. The Examiner finds Onozato further discloses belt 60 is driven by toothed wheels (i.e., sprockets 75 / 76) at an exterior of the spiral path, which engage appendices (i.e., appendage parts 122) emerging from an outer edge of belt 60, to drag belt 60 into movement. Non-Final Act. 6; Onozato, Figs. 9–10, 16:21–27, 17:1–12 (sprockets 75 and 76 engage appendage members 62 on belt 60 to

drive the belt); *see also id.* at Fig. 15, 2:27–60, 10:9–11 (cogged wheel 114 engages appendage parts 122 on conveyor belt 110 to drive the belt).

The Examiner determines it would have been obvious "to modify the belt driving and support system of Nothum with the belt driving and support system of Onozato, to increase space efficiency and reduce conveyor drive mass for energy efficiency." Non-Final Act. 6–7 (citing Onozato, 7:42–8:12).

Appellant raises four challenges to the Examiner's foregoing determination of obviousness: (1) there is no reasonable expectation of success; (2) the proposed modification would improperly change Nothum's principle of operation; (3) there is no persuasive reason for the Examiner's proposed modification; and (4) the rejection is tainted by hindsight. *See* Appeal Br. 10–19. Appellant does not challenge the Examiner's findings comparing Nothum and Onozato with the subject matter of claim 1, or the Examiner's additional findings and determinations relying on Simensen for obviousness. *See id.* We consider each challenge (1)–(4) in turn.

1. Expectation of Success

Appellant's first argument assumes the Examiner proposes the obviousness of *retaining* Nothum's turning barrel 70 and paddles 78 to engage inner overhangs 46 on conveyor belt 24, while *adding* Onozato's support columns 66 at the inner and outer side of belt 24 for support. Appeal Br. 11–12; *see also* Nothum, Figs. 2 and 5, ¶¶ 38, 42 (illustrating and describing interaction between paddles 78 and overhangs 46). Based on that assumption, Appellant asserts there is no expectation of success, because adding inner support columns for Nothum's belt 24 would interfere with the

driving interaction between Nothum's paddles 78 and overhangs 46. Appeal Br. 11–12.

The Examiner answers that, in the proposed combination, the inner drum drive of Nothum "has been replaced" with the outer drive system of Onozato. Ans. 4. Thus, we conclude Appellant's expectation of success argument is based on a rejection that is not made by the Examiner, and so is not persuasive.

2. Nothum's Principle of Operation

Appellant's second argument is that the Examiner's proposed modification of Nothum would improperly change Nothum's principle of operation. Appeal Br. 12–14; Reply Br. 3. According to Appellant, Nothum's principle of operation is "providing turning barrel 70 and paddles 78 that extend from turning barrel 70 and entrain inboard overhangs 46 of conveyor 24." Appeal Br. 13 (citing Nothum ¶¶ 37–38, 42). In support, Appellant cites Nothum's disclosure that "[t]he barrel 70 provides an advantageous way of driving the conveyor 24/30, as by interfacing an inboard structure 46 attached to the conveyor 24." *Id.* (quoting Nothum ¶ 42). Appellant concludes "eliminat[ing] rotating inner barrel 70 and paddles 78 entirely" and replacing them with Onozato's outer drive system "would require a substantial reconstruction and redesign" and "run against the teachings of" Nothum. *Id.* at 13–14.

The Examiner answers that replacing Nothum's inner drive system with Onozato's outer drive system would "retain[] the principle inventive feature of" Nothum, which the Examiner describes as a "zone heating system." Ans. 4, 5 (citing Nothum, Fig. 2, ¶¶ 17, 43). Thus, the Examiner

concludes the proposed obviousness would not improperly change Nothum's principle of operation. *Id.*

Upon review of the foregoing, we conclude the Examiner's proposed replacement of Nothum's inner drive system with Onozato's outer drive system would not improperly change Nothum's principle of operation. We acknowledge Nothum's disclosure that its inner drive system comprising barrel 70 and paddles 78 advantageously permits the outer enclosure of the oven to "closely surround" the outer extent of the spiral-traveling conveyor belt within the oven. Nothum ¶ 42. Nonetheless, this is only one of several identified advantages disclosed by Nothum for its oven, and the other advantages are unrelated to the inner drive system. *Id.*; *see also id.* ¶¶ 6–17 (identifying advantages of Nothum's oven as including proximity between heat source and food conveyor; placing the drive engine outside of the oven to reduce degradation and damage; providing space for air circulation; and zonal heating).

Thus, we conclude Nothum's principle of operation is to provide "a spiral oven" for heating food, which is "scalable in a range between large and compact scale extremes." *Id.* ¶¶ 3–4. That principle is not changed by replacing Nothum's inner drive system with Onozato's outer drive system.

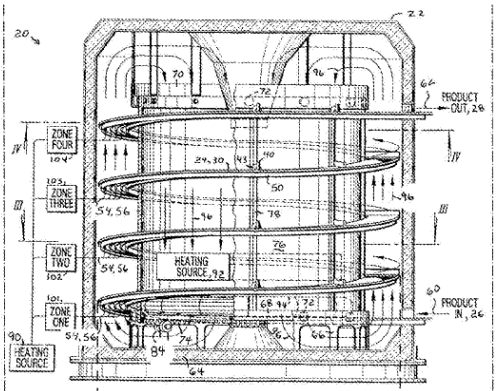
3. Rational Underpinning for Obviousness

Appellant's third argument is that the Examiner "fails to set forth a convincing line of reasoning to support the legal conclusion of obviousness." Appeal Br. 14–15. Appellant acknowledges the Examiner's determination that replacing Nothum's inner drive system with Onozato's outer drive system would "increase space efficiency and reduce conveyor drive mass for

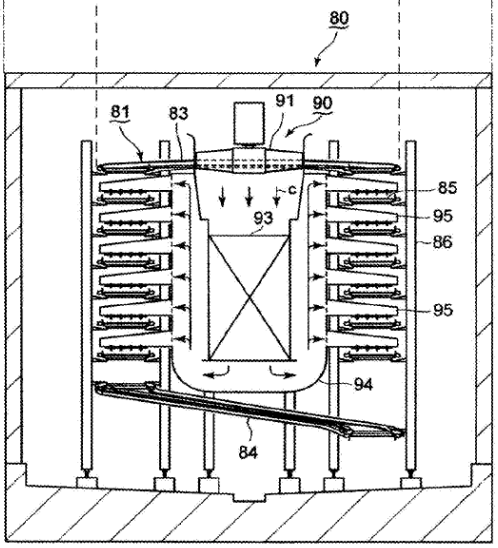
energy efficiency." *Id.* at 14 (quoting Non-Final Act. 7). Appellant contends this determination is not supported by the evidence, because Nothum's oven is already designed to be compact, and Nothum describes its inner barrel 70 and paddle 78 drive mechanism as "advantageous" because "[t]he oven enclosure 22 that houses the spiral ramp 50 is shrunk down [to] closely surround the outside of the spiral oven ramp 50 for a more compact oven compartment." *Id.* at 15 (quoting Nothum ¶ 42). Appellant asserts adding a plurality of vertical columns to support Nothum's conveyor 24 would in fact "increase space usage," versus Nothum's existing inner barrel 70 and paddle 78 drive mechanism. *Id.*

In answer, the Examiner maintains that replacing Nothum's inner drive system with Onozato's outer drive system would provide a "compact and more efficient motivation means of a spiral conveyor." Ans. 4, 5 (citing Onozato, Figs. 8, 9, and 12, 7:42–8:12).

Appellant replies that, based on the following comparison between Nothum's Figure 2 and Onozato's Figure 11, "one can easily see that for an equal diameter of the conveyor spiral, the heat treatment apparatus disclosed by Onozato has a wider overall diameter, that is, is less compact" than Nothum. Reply Br. 3–5.



Nothum, FIG. 2



Onozato, FIG. 11

Appellant's comparison adds four dashed lines, extending between Nothum's Figure 2 and Onozato's Figure 11, to compare the respective sizes of the illustrated ovens. *Id.*

Appellant further argues the Examiner errs in relying on Onozato's disclosure at column 7, line 42 through column 8, line 12, to support the proposed obviousness. Reply Br. 5–6. Appellant contends this passage "discusses the desirability of the arrangement disclosed therein over the prior art cited by Onozato in the Background of the Invention, which includes five Japanese patent documents," none of which has been established to be similar to Nothum. *Id.* Appellant asserts Onozato discloses an apparatus for freezing food using freezing unit 51 disposed

inside Onozato's spiral food conveyance route 41 to blow cold air over the food, which is different from Nothum's apparatus which heats food with heated coils disposed in a spiral pattern parallel to the conveyor spiral, so there is no rational relationship between the references to support obviousness. *Id.* (citing Onozato, Fig. 11, 8:47–57).

Upon review of the foregoing, we conclude the Examiner has satisfied the burden to provide a rational underpinning sufficient to support the legal conclusion of obviousness. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), *cited with approval in KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). In particular, the Examiner cites two reasons for the proposed modification of Nothum, both of which are supported by a preponderance of the evidence.

The first reason is that replacing Nothum's inner drive system with Onozato's outer drive system would "reduce conveyor drive mass for energy efficiency," thereby providing a "more efficient motivation means" than found in Nothum. Non-Final Act. 7; Ans. 4, 5. This determination is supported by Onozato's disclosure. Onozato discusses "patent reference 2" (JP 2002-068436 A), which discloses a "rotating drum that drives the conveyer belt is arranged inside the spiral route." Onozato, code (56), 1:56, 2:61–3:3. According to Onozato, "the pulling power has to be great" in patent reference 2, because part of the supplied power must rotate "the heavy rotating drum." *Id.* at 3:4–16 (stating further: "In other words, the drive energy saving . . . cannot be achieved so long as the rotating drum is used").

Onozato then describes how "the apparatus of [Onozato's] second invention," shown in Figures 8–10 and cited by the Examiner, provides "a simple configuration of the power transmission mechanisms" in which "it

becomes unnecessary to provide a drive device for the transfer belt inside the spiral transfer route" as in patent reference 2. *Id.* at 7:42–8:3, 9:63–67. Further, "the drive torque and the drive power can be remarkably reduced," because "the power for rotating the drum is not necessary." *Id.* at 8:9–11.

A person of ordinary skill in the art, upon reviewing the foregoing disclosures in Onozato, would have understood that Nothum's turning barrel 70 presents the same design challenge as patent reference 2, in that a portion of the energy provided to Nothum's drive train will have to rotate barrel 70. *See, e.g.*, Nothum, Fig. 2 (illustrating barrel 70 in oven 20). This would lead a person of ordinary skill in the art to conclude that the energy consumption efficiency of Nothum's drive mechanism could be improved by replacing Nothum's barrel 70 with Onozato's outer drive system, using toothed wheels instead of the barrel.

We disagree with Appellant's suggestion that a person of ordinary skill in the art would have to review the specific disclosure of patent reference 2 to reach this conclusion. *See* Reply Br. 5–6. Instead, we conclude Onozato's own description of patent reference 2, and how Onozato's invention improves upon patent reference 2, would have led a person of ordinary skill in the art to the invention recited in claim 1 based only on Nothum and Onozato. *See, e.g.*, *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."); *id.* at 420 ("in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle").

The Examiner's second reason for replacing Nothum's inner drive system with Onozato's outer drive system is that this would "increase space

efficiency" versus Nothum's existing oven. Non-Final Act. 7; Ans. 4, 5. This determination is supported by Onozato's disclosure. Onozato discusses how patent reference 2 presents "a difficulty in ensuring a sufficient space inside the spiral route of the conveyor belt" due to the presence of the rotating drum, as well as a heat-treatment-air generating device, in that region. Onozato, 2:61–3:3. Onozato then describes how the apparatus shown in Figures 8–10 overcomes this difficulty by providing a belt drive mechanism outside of the spiral route of the belt, so "the degree of freedom of the layout of the heat-treatment-gas generating device as well as the distribution duct can be increased." *Id.* at 7:65–8:8.

A person of ordinary skill in the art would have understood that replacing Nothum's inner drive turning barrel 70 with an outer drive mechanism such as is disclosed in Onozato would achieve the same benefit of freeing up space inside the conveyor belt spiral, to facilitate housing other components of the oven inside the spiral. Further, even if there is no need for such components, we agree with the Examiner's finding that the removal of Nothum's barrel 70 would permit the outer spiral radius of conveyor 24 to be reduced, thereby allowing an even more compact system, even after adding Onozato's vertical support columns and toothed wheels. *See, e.g.*, Nothum, Figs. 2–3; Ans. 4, 6.

Appellant's rebuttal to the foregoing is not persuasive. Appellant's comparison between the respective sizes of Nothum's oven and Onozato's oven (Reply Br. 3–5, reproduced above) assumes without supporting evidence that the two Figures are drawn to the same scale. It is, therefore, unpersuasive. *See, e.g.*, *Nystrom v. Trex Co., Inc.*, 424 F.3d 1136, 1148–49 (Fed. Cir. 2005) (reversing district court judgment of patent invalidity based

on software modeling of a Figure in the prior art patent which was not explicitly made to scale) (citing *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) and *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977)).

For the foregoing reasons, we conclude the Examiner has satisfied the burden to provide a rational underpinning sufficient to support the legal conclusion of obviousness.

4. Hindsight

Appellant's fourth argument is that the Examiner's rejection is tainted by hindsight. Appeal Br. 15–19; Reply Br. 6. Many of Appellant's supporting assertions are simply a re-packaging of arguments already considered above, and are not persuasive for the reasons provided.

Appellant additionally relies on the prosecution history leading to the present appeal, as establishing the use of improper hindsight. Appeal Br. 16–19. Appellant asserts the Examiner initially cited Nothum as a primary reference in a series of obviousness rejections, then withdrew those rejections in favor of a new series of obviousness rejections citing Lago (EP 0 544 085 A1) as the primary reference, and then withdrew those rejections in favor of a new series of obviousness rejections returning to Nothum as the primary reference. *Id.* at 16–17. According to Appellant, the first Nothum-led obviousness rejections found Nothum's paddles 78 correspond to the "toothed wheels" that engage appendices emerging from "an outer edge" of conveyor 24, as recited in claim 1. *Id.* at 18. Then the second Nothum-led obviousness rejections eschewed that finding, in favor of relying on Onozato in those regards. *Id.* Appellant describes this series

of rejections as flip-flopping, applying different interpretations of Nothum in a hindsight-driven attempt to establish obviousness. *Id.* at 17–19.

We are not persuaded. Instead, we discern only a routine back-and-forth patent prosecution, during which the Examiner was persuaded by Appellant's argument and therefore modified the rejections presented. Specifically, the Examiner was persuaded that the initial rejections erred in finding Nothum's paddles 78 are toothed wheels that engage appendices emerging from an outer edge of conveyor 24, so the Examiner then relied on the obviousness of employing such an outer drive system in Nothum's oven in light of Onozato. This does not establish hindsight, but rather establishes the Examiner's willingness to consider the merits of Appellant's arguments. Thus, we conclude the Examiner's rejection is not tainted by hindsight.

CONCLUSION

In summary, we sustain the rejection of claims 1–9 and 11 as having been obvious over Nothum, Onozato, and Simensen.

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed
1–9, 11	103	Nothum, Onozato, Simensen	1–9, 11	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED